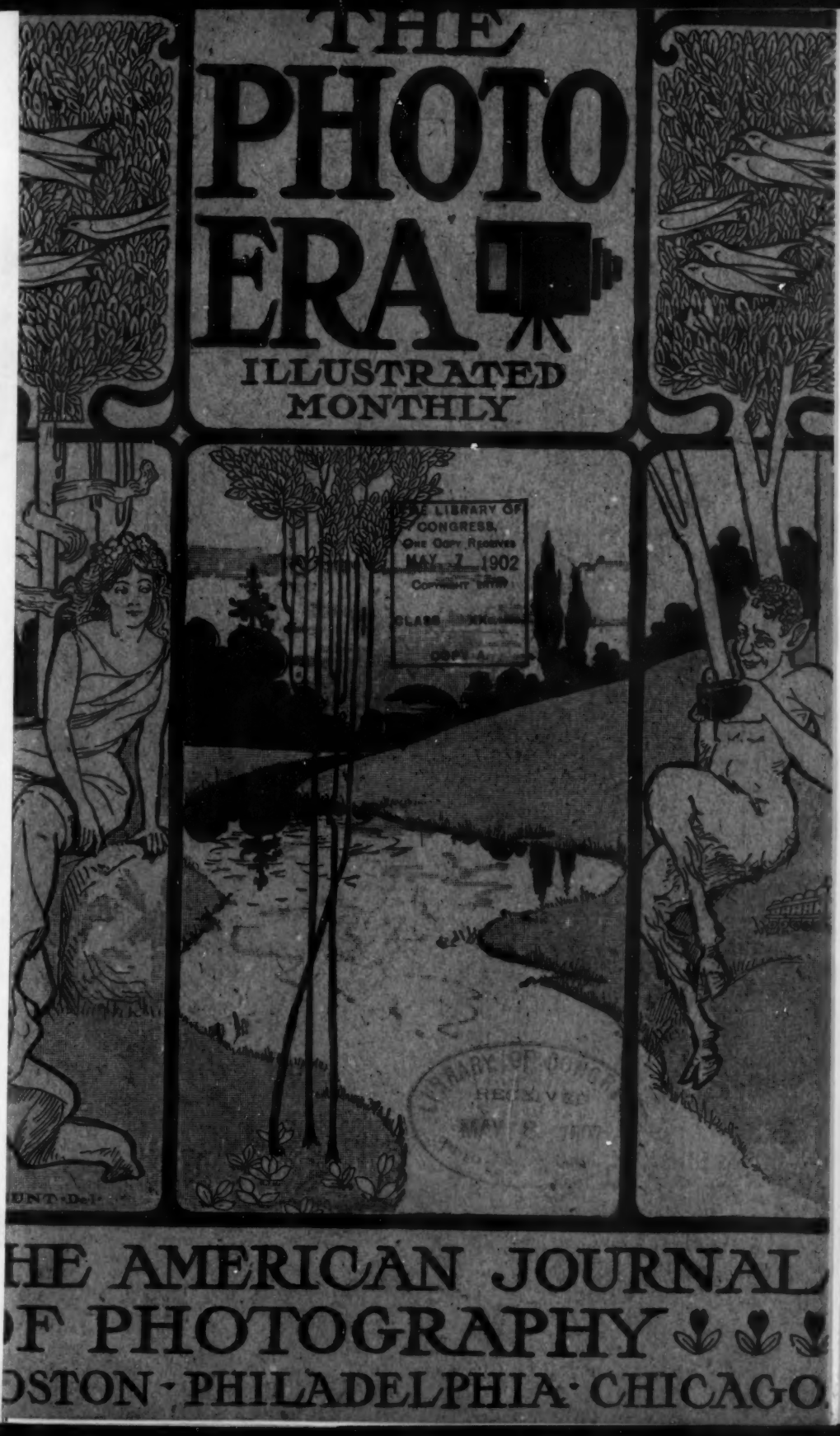
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THE·AMERICAN·JOURNAL OF·PHOTOGRAPHY
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Photography and Education

Suggestions for a Technical Lantern Slide Exchange

F. A. WAUGH

THE readers of the PHOTO ERA know all about the general workings of the ordinary lantern slide exchange, so that it will be unnecessary to explain the fundamental principles here. A somewhat novel application of the idea is now being put into effect, however, which may be of interest and worthy of record.

In technical lines of teaching the stereopticon is of very great value. There are always different kinds of apparatus and natural phenomena which may be illustrated by pictures, charts, drawings or tables, and the best way to exhibit such pictures is through the stereopticon. It is my observation that teachers of physics, engineering, architecture, botany, and all the biological sciences are using the lantern more and more by way of illustration. Take it in geology, for example: There are all the methods of soil formation, studies of stratification, fossils, glaciers, mountain formation, and in fact almost everything in the realm of the science, which may be effectually and often beautifully pictured before a class by means of lantern slides.

It usually happens, moreover, that the teacher is called on to lecture in a more or less popular way outside his classroom, and then he finds the stereopticon and the nicely illuminated pictures even more to his advantage.

CALOPOGOU PULCHELLUS
By J. HORACE MCFARLAND.

The instance which I started in to describe involves the teaching of horticulture. This subject, covering both a science and an art, lends itself most admirably to picture illustration. There are all sorts of fruits,

methods of cultivation, grafting, spraying, picking, packing, shipping and marketing, and no end of other things which may be shown before a classroom audience, or before one's select seminar through the stereopticon. A considerable number of

STRAWBERRY APPLE. By F. A. Waugh

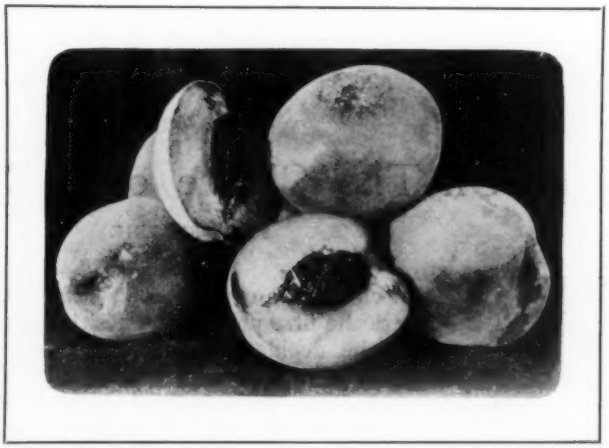
men now teaching horticulture in various American colleges are using the lantern in this way, as I was able to learn by correspondence. The suggestion came very naturally then that a lantern slide exchange be arranged by the simple means of putting together one set of slides from each contributor. These slides could be forwarded in rotation along a route list from one member to the next, until each subscriber had shown to his class or to his local horticultural club the slides contributed by the others.

This is the plan which was put into effect, and which is now in operation with fair promise of success. It offers a pleasant diversity in the classroom exercises, brings fellow workers in the horticultural field into closer touch with each other, and often calls attention to important ideas or new phases of study which might otherwise go unnoticed. The general rules and regulations are, of course, the same as they are in any lantern slide exchange. The method is one which might be adopted in any technical field where there are a number of isolated workers. It seems to me, indeed, that ex-changes might be profitably arranged between all sorts of schools, including high schools and academies, as well as between specialists working in the higher institutions of learning and along more advanced lines of research and instruction.

Enough has been said recently in the Photo Era and elsewhere, to show what a suprising range of possibility there is in the camera for teaching purposes. We have had reports from teachers who have successfully adapted the camera to the needs of classes in civics, history, geography and even English. And whenever a picture can be advantageously used before a class, the stereopticon is the most effective means of presenting it. In any subject for which lantern slides can be made, an exchange between teachers might be managed.

It is easily seen, however, that the various technical and scientific lines are those which can be most generously and satisfactorily illustrated. When the lantern is once put into use in these subjects it is immediately indispensable. Here are a few of the subjects which are of this character : agriculture, anatomy, astronomy, (physical and mathematical), bacteriology, botany (morphological ,physiological and systematic), bird study, (just now the vogue), chemistry (various lines, especially industrial),

embryology, engineering (electrical, civil, mechanical, naval, sanitary, etc.), entomology, ethnology, evolution, forestry, geography, geology, horticulture, hydraulics, hydrostatics, landscape gardening, machine design, metallurgy, meteorology, military supply and equipment, mineralogy, mycology, nature study in many diverse lines, naval supply and equipment, pathology, pomology, physiology, physics, surgery, zoology. It will be seen at once that many of the subjects, such as architecture, agriculture and engineering are capable of extensive subdivision, each name a few of the series of lantern slides which can be easily made up in the line of horticulture: acclimatization, climatic variation, culture of special crops (e. g., celery, grape, chrysanthemum, etc., endlessly),



DENTON. By F. A. Waugh.

PHLOX DIVARICATA. By J. Horace McFarland.

diseases of plants, drying and evaporating fruit, greenhouse construction, greenhouse crops, electroculture, fruits of all sorts (apples, plums, strawberries, etc.), fruit packages, germination, graftage, irrigation, etc. The actual worker will find hundreds of others. Some of the subjects here mentioned, for example, types of fruits, will give slides ad infinitum. I know one man who has 300 different varieties of plums growing on his farm. Every one might be illustrated in fruit, flower and tree; and then the same varieties might be illustrated again as they are grown in Ontario, California and South Carolina. There are said to be 2,000

new department offering a ready field for lantern slide illustration.

Just as an example of the multifarious character of the subjects which present themselves when one takes the matter in hand, I will

varieties of apples in propagation in North America. Think of illustrating them all! Dr. Sargent made fourteen large quarto volumes to illustrate the trees of North America. What a magnificent set of lantern slides could have been made with that material! There are about twenty-five books now on sale dealing with the wild flowers of these parts. Every one of these flowers will make from one to a dozen lantern slides. It is a very moderate statement to say that the subject is quite illimitable.

On The Choice of a Camera

F. R. FRAPRIE

IN choosing a camera the first point to be decided is whether plates or films are to be used. Let us consider, then, the relative advantages of plates and films. It will be generally admitted that plates are used in far greater quantities than films, and that they are used exclusively by professional photographers. In fact, it may be laid down as a general proposition that wherever a camera is set up in a fixed position to take a picture, and where time is devoted to the composition and arrangement of the subject, a plate is to be used in preference to a film. One reason for this is that plates may be had in much greater variety of speed and kind than films. Plates may be had of all grades of speed, of contrastiness, of color sensitiveness, of resistance to halation. There is only one grade of films, of medium speed, not very capable of producing contrast, not orthochromatic, and with only a slight degree of resistance to halation, since its black backing is not in optical contact with the support. Where all the possibilities of composition are to be studied on the ground glass, there plates will almost invariably be used, because of the cost of the roll-holder and the great excess in price of films over plates, as well as the convenience of being able to use plates in the desired number with the possibility of immediate development.

It being admitted that plates possess superiority for the majority of purposes, let us now see what are the undeniable advantages of films in special cases. The one great point of superiority of films over plates is in weight and bulk. One dozen plates weighs as much as twelve or fourteen dozen films, and occupies the space of four dozen of the same size. For traveling, for bicycle trips, for long expeditions, consequently, films are often to be desired. There is no danger of breaking films, and they may be sent to be developed or printed by mail or express with little risk. They are so thin that they may be printed from either side, as is necessary in single-transfer carbon, with perfect sharpness. These advantages, however, are not sufficient to balance the disadvantages of films for general work, and the comparative use-

NEAR THE WAYSIDE INN, SUDBURY. C. F. STILES.

fulness of the two kinds of sensitive material may be summed up as follows: For serious, all-round work, use plates; for traveling and for amusement, use films.

Let us now consider the purchase of a camera. If a film camera is desired, and it is to be used for a toy, for making snapshots of one's friends, for vacation scenes, and such less serious purposes, there are several kinds of film cameras on the market, some in square box form and others folding, at various prices, and the dealer will give information as to their various capabilities and utilities. For traveling and for possible more serious work, more money should be paid for a camera, and one should be purchased which may be used for either plates or films, and be set upon a tripod as well as be carried in the hand.

If plates are to be used, the choice will naturally fall upon one of the various types of hand and stand instruments which may be found of many makes and styles. In all cases where the expense is not too great, it is advisable to buy a telephoto instrument, as the possible range of work is much increased by the extra draw of this instrument. With it, it is possible to copy pictures at the same enlargement, to take pictures of distant objects of twice the ordinary size, by using only one half of the lens, to use lenses of much greater focal length than those supplied with the camera, and, in short, to greatly enlarge the capacity of the camera. For portability, perhaps the cycle form is the best, but the plate-holders cannot be carried in the camera box, as in the other form, and when put in place for the picture, are exposed to light on all sides, thereby incurring more than a possibility of fogging the plate by leaking of light.

Beyond the 5x7 size, all cameras cease to be very portable, and, save

in special cases, are no longer useful as hand instruments. This being the case, the old style wooden camera with unprotected bellows is as useful as the newer type, and as these cameras may often be found in secondhand stores at a fraction of their original cost, it pays to look for such bargains. The original lenses are usually slow, and are likely to show distortion if used at full aperture, but if they are replaced by modern rapid rectilinear or anastigmatic lenses, the resulting combination is capable of good work.

For very rapid snapshot work the ordinary shutter is useless, and must be replaced by a focal-plane shutter, which will give all the speed required for the most rapid motion that can be caught on our present plates. The ordinary camera with a finder, which should be very large and bright, may be used for this purpose with fair success, but for the best results, and to insure that the object will always be centered on the plate, special cameras are desirable. These may be divided into two types, twin-lens and reflex. The twin-lens camera is practically two cameras built together, each with its lens and ground glass. The lenses are accurately paired and focused by one screw, and the object may be watched upon one ground glass until the shutter of the other lens is snapped. As the cost of two good lenses is quite large, the reflex camera has been devised, which accomplishes the same result with one lens. This camera has a mirror within, which reflects the light from the lens to a ground glass placed in the top of the camera, and protected by a hood. On this ground glass the object is watched until the proper time for the exposure, when the releasing of a spring brings the mirror up against the top of the camera to exclude light, and at the same time releases the focal-plane shutter. Cameras of both these types are now upon the American market.

A word as to lenses. The rapid rectilinear lenses furnished with all high-grade American cameras are very satisfactory for the price, but they are not stigmatically correct, and usually work at rather small aperture. For high speed and perfect flatness of field, it is necessary to have recourse to one of the various anastigmats, all of which are capable of good work, the price depending in large measure on the speed at which they work. For general work a lens of from nine to twelve inches focus is most desirable, as the perspective is much more correct than that of the six to seven inch lenses ordinarily used.

As to the construction of the camera, see that the joints are all dove-tailed and glued as well as nailed. A camera is sure to get a few falls, and unless the joints are very firm, they will soon become very shaky. A very essential point is that the front pieces between which the lens-board slides shall be firmly united at the top. This is one of the weakest points in the construction of many cameras, and damage is almost sure to result unless this precaution is insisted upon. The bellows, if of more than ordinary length, should be provided with straps to fasten it forward when not extended to its full length, or its folds will cut off the edges of the plate. The finder should always be large and brilliant, and the type in which the image is not flat and moves with the eye, should be sedulously eschewed, as it is worse than useless.

Instantaneous Photography

W. F. HAPGOOD

AS the elimination of motion is the principal condition for a satisfactory picture of moving objects it is evident that the first consideration is at what speed a given picture should be taken, and when that point has been settled the working opening of the lens is regulated with due regard to the speed of the plates or film used, in connection with the weather, and the time of the day and year.

It is impossible to produce an absolutely sharp image of any moving object, as no matter how short the exposure be, the picture will have moved over the plate during the time the shutter exposed it, and the result will be that we get two pictures of the original more or less completely overlapping each other so closely that our eye does not detect more than one picture, and in order to obtain that effect the difference between the two pictures should not be more than 1-100 of an inch. This condition is the basis on which all further considerations depend.

It will be understood that we have ultimately to deal with the speed with which the picture travels over the plate, and not with the actual speed of the object. The speed of the picture bears exactly the same relation to the speed of the object, as the size of the picture bears to the size of the object. We infer from this that the size of the lens (i. e., its focal length), and its distance from the object enter into the question, since these are the factors which determine the relative

PRACTISING FOR THE CIRCUS.

size of the object and picture. Since each camera is fitted with one lens we can consider the focal length to be a constant value and give attention only to the variations in speed owing to the different distances of the lens from the object.

The following table gives the proportionate size of object and picture for lenses of different focal lengths at varying distances:

Focal Distances:	10 ft.	20 ft.	50. ft.	100 ft.
Length of Lens.				
6 in. Proportions:	1-20	1-40	1-100	1-200
8 1-2 in. "	1-14	1-28	1-70	1-140
10 1-2 " "	1-10	1-20	1-50	1-100
12 " "	19	1-18	1-44	1-90

For lenses of intermediate foci the values for the next larger lens will apply.

The next point is the actual speed of the objects to be photographed, and in dealing with this matter it is sufficient for all practical purposes to classify them as under:

	Miles per hour	Inches per sec.
Pedestrians . . .	3	52
Cabs, carriages, etc. . .	6	100
Trolley cars in city streets (fast),	8	135
Fire engines at full speed .	9	150
Bicyclists in city (fast) .	8	135
Bicyclists, ordinary gait .	6	100
Trotting horse at 2.10 gait .		488
Railroad train traveling 45 miles an hour . .		792

In making use of this table it should be borne in mind that the apparent speed is considerably reduced by the angle under which a moving object approaches or recedes. When that angle is 60 degrees, the apparent speed is just one-half the actual speed.

The foregoing will now permit us to determine the required speed of exposure for different lenses and subjects, and the following example will explain how to use the table in the case of an ordinary street scene with a lens of 6-inch focus.

Suppose the picture to contain a trolley car at 50 feet approximate distance. As this car is the fastest moving object in the picture the exposure is regulated in accordance.

We find that the 6-inch lens will draw a picture of 1-100 of the actual size of any object at a 50 foot distance. The picture will thus also move over the plate with a speed equal to 1-100 of the actual speed of the car, which we assume to be 135 inches per second. As the car approaches us under an angle of 60 degrees or less, we may reduce the apparent speed to one-half the actual speed, which leads to the result that the picture moves at the rate of $\frac{135}{2} \times \frac{1}{100} = 0.675$ inches per second over the plate.

As this amount of motion is 67.5 times greater than what may be allowed for a sharp picture it is evident that an exposure of $\frac{1}{67.5}$ or say 1-65 second, will give the desired effect.

Having thus ascertained the maximum exposure which will give a sharp picture we can proceed to find at which opening we should adjust the diaphragm. Assuming that the most rapid kind of plates of any one of the reliable be used, we decide this matter by consulting an exposure table or exposure meter; and as these tables indicate the required exposures for a given opening, we simply have to work backward and find which opening is given for the exposure already decided on.—"Haslerisms."

Foreign Abstracts

Developing Formulas The following series of formulas for different developers have been taken from a variety of sources, are all highly recommended by their authors, and afford a considerable range of choice.

1. Edinol. (Namias, Bull. soc. fot. ital. 1902: 8.)

Potassium metabisulphite	20 g
Caustic potash	10 g
Potassium carbonate	30 g
Potassium bromide	1.5 g
Water	50 cc
Edinol	5 g
Water to make	100 cc

For use mix one part with nine of water.

2. Edinol-acetone. (Precht, Phot: Rundschau, 1902: 28.)

Sodium sulphite	8 g
Water	100 cc
Edinol	1 g
Acetone	10 cc

3. Edinol-hydrochinon. (Deutsche Phot.-Zeit. 1902: 94.)

Edinol	10 g
Hydrochinon	5 g
Sodium sulphite	80 g
Potassium bromide	1 g
Sodium carbonate xtals	80 g
Water	750 cc

For use mix one part with two to three of water.

4. Edinol-hydrochinon. (P. Hanneke, Photo. Mitteilungen, 1902: 75.

A. Sodium sulphite	30 g
Water	500 cc
Edinol	2 g
Hydrochinon	3 g
Potassium bromide	0.5 g
B. Potassium carbonate	50 g
Water	500 cc

For use mix equal parts. Is very rapid, and has strong covering power. Very good for bromide papers also.

5. Glycin. (Amateur Phot. 1902: 78.)

A. Hot water	1000 cc
Sodium sulphite	125 g
Potassium carbonate	50 g
Glycin	50 g
B. Water	1000 cc
Potassium carbonate	125 g

For normal exposure mix one of A, two of B and one of water. For underexposure use more water and develop longer.

6. Glycin.

Water	600 cc
Sodium sulphite	30 g
Potassium carbonate	26 g
Glycin	5 g
Potassium bromide	1 g

Image appears in 20 seconds and development is complete in 4-5 minutes.

7. Metol-glycin. (Remy, Le Nord Phot. Feb. 1902.)

Water	1000 cc
Sodium sulphite	125 g
Glycin	5 g
Metol	25 g
Potassium carbonate	135 g

8. Glycin-hydrochinon. (La Phot. Francaise, 1901: 19.)

A. Glycin	12 g
Hydrochinon	4 g
Potassium carbonate	12 g
Sodium sulphite	45 g
Boiled water	300 cc
B. Potassium carbonate	30 g
Water	300 cc

For use mix one part A and two parts B. No bromide is required.

9. Synthol. (Photogram, Nov. 1901.)

Water	500 cc
Sodium sulphite	35 g
Synthol	3.5 g
Potassium bromide	0.5 g

No alkali is required. The solution must not be filtered.

10. Paramidophenol. (F. C. Lambert, Anthony's Bull.)

Water	300 g
Paramidophenol	4 g
Sodium sulphite	62 g
Lithium carbonate	4 g

11. Imogen sulphite for bromide papers. (Paul Grundner.)

Imogen sulphite sol. 1:12,	80 cc
Soda sol. 1:2	40 cc
Water	180 cc
Potassium bromide 1:10,	2-3 cc

12. Imogen sulphite for stand-development. (Pizzighelli.)

Imogen sulphite	80 cc
Saturated sol. soda	40 cc
Potassium bromide 1:10	5 cc
Water	1000 cc

13. Edinol. (Arthur Suss, Apollo, 1902 : 66.)

Potassium metabisulphite	1 g
Edinol	1 g
Potassium carbonate	6 to 10 g
Pure water	500 cc

For stand-development of under-exposed plates. Development should not continue more than five hours.

14. Pyrocatechin-acetone. (La Phot. Francaise.)

A.	Water	250 cc
	Sodium sulphite	25 g
	Pyrocatechin	5 g
B.	Lithium hydroxide	3 g
	Water	250 cc
C.	Pure acetone.	

For use take three parts A, three parts B, two parts C and forty parts of water. For stand-development.

15 Amidol-hydrochinon. (Th. Op de Coul, Apollo, 1902: 55.)

Water	1000 cc
Sodium sulphite	70 g
Amidol	4 g
Hydrochinon	4 g
Potassium carbonate	20 g
Yellow prussiate of potash	5 g

For stand-development of under-exposed plates. For use mix one part with eight of water.

16. Ortol. (C. H. Bothamley, Anthony's Bull.)

Water	1800 cc
Ortol	2 g
Potassium metabisulphite,	1 g
Sodium sulphite	13 g
Sodium carbonate	13 g
Potassium bromide	0.3 g

For stand-development. A very slow-acting developer, requiring about twelve hours for complete development.

17. Metol-hydrochinon. (Photo-Gazette, 1902: 4.)

Sodium sulphite	50 g
Water	1000 cc
Hydrochinon	6 g
Metol	4 g
Yellow prussiate of potash,	25 g
Potassium bromide	0.25 g
Potassium carbonate	100 g

For stand-development. For use mix one part with fifty parts of water.

18. Glycin. (Dr. A. Bogisch, Deutscher Phot. Kalender 1901: 205.)

Warm water	400 cc
Sodium sulphite	5 g
Sodium carbonate xtals	75 g
Glycin	5 g
Water after solution	2100 cc

For stand-development. More sulphite is to be avoided on account of yellow fog. Will develop in from 20 to 60 minutes according to exposure.

Reduction of Negatives

LUMIERE BROS. AND SEYEWETZ

THE operation of lessening the intensity of silver images on the negative known as reduction can be effected by several processes, which, according to their effects, may be divided into two classes.

First, reducers acting in a uniform manner on the different parts of the image.

Second, those whose action is exercised especially on the opaque parts of the image.

To the first category belong the peroxide salts of cerium, the mixture of potassium ferricyanide and sodium hyposulphite, and a certain number of metallic salts of maximum values, whose properties we have already ascertained and made known.

This method of reduction is always utilized when it is desired to increase the contrasts in an over-exposed negative. On the other hand, the second method is employed when a negative lacking in exposure has been too much developed. It is then necessary to reduce the image without losing any of the details in the most transparent parts.

This method of reduction can be

A SCENE IN MEXICO. By Salvador E. Gutierres.

accomplished, either by an indirect process, or directly by means of peroxide compounds possessing properties similar to those of hydrogen dioxide.

In the first process, as described by Dr. Eder, all the silver of the plate is converted into a chloride by means of ferric chloride; then the image is treated with a developer acting slowly, and the development arrested before the plate becomes too opaque. The chloride not reduced is afterwards removed by hypo.

This method, which is based on an interesting principle, is of delicate application, because of the uncertainty in controlling the action of the developer.

In the second process, peroxide substances are employed, such as persulphates, especially ammonium persulphate, which may act either as an oxidizer or reducer, according to the conditions in which it is employed. Besides ammonium persulphate, two other substances are now known to produce similar effects.

One of these is hydrogen dioxide in acid solution, indicated by Dr. Andresen; the other, potassium permanganate, also in acid solution, which has been recommended by Prof. Namias, with the following formula:

Potassium permanganate . .	0.5 g
Concentrated sulphuric acid .	1.0 g
Water	1 liter

It may be admitted that the ammonium persulphate and the acid hydrogen dioxide act in an analogous manner on the silver of the negative; the first by producing a double sulphate of silver and ammonium, the second by likewise yielding silver sulphate if the hydrogen dioxide receives an addition of sulphuric acid.

The particular action of the ammonium persulphate, which reduces much more rapidly the intense parts of the plate than the light parts, may be explained by a secondary reducing reaction, which has been caused by the presence of the double sulphate of silver and ammonium. A similar reaction can be obtained with the acid hydogen dioxide.

We have thought that this reaction, inverse to the principal reaction, tends especially to appear in the exterior of the gelatine film, where the double sulphate of silver and ammonium is found in an excess of persulphate, while in the interior of the film the persulphate is only utilized to dissolve the silver of the negative, the inverse reaction occuring much less readily because of the absence of the excess of ammonium persulphate. This hypothesis, which is equally applicable to hydrogen dioxide may to a certain extent explain why the opaque portions, which occupy much more of the thickness of the film than the transparent parts, are more rapidly dissolved than the latter by ammonium persulphate.

Our theory has been much discussed by various writers, but no one has given a satisfactory explanation of this curious phenomenon.

The action of potassium permanganate in presence of sulphuric acid can likewise be explained by reactions similar to the preceding.

It may in reality be supposed that the solution of the silver takes place as follows:

$$2\,K\,Mn\,O_4 + Ag + 4\,H_2\,SO_4 = Ag\,SO_4 + 2\,Mn\,SO_4 + K_2\,SO_4 + 4\,H_2\,O + 2O_2$$

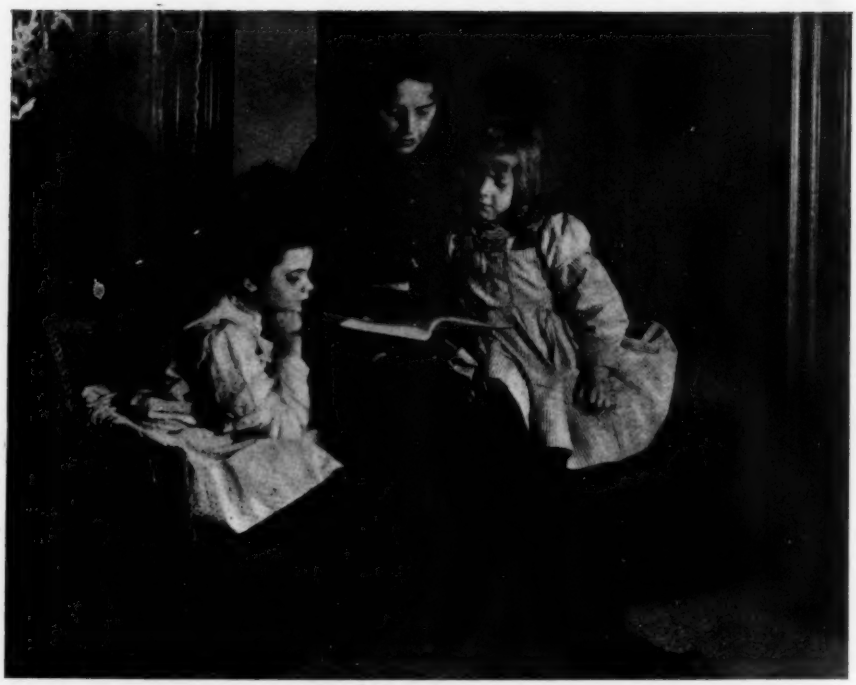
As to the inverse reaction preventing the permanganate from acting on the silver of the transparent parts at the surface of the film, it is admitted that there is a tendency to deposit the silver on these parts according to the equation:

$$2\,K\,Mn\,O_4 + 3\,Ag\,SO_4 = K_2\,SO_4 + 2\,Mn\,SO_4 + 3\,Ag + 4\,O_2$$

as with ammonium per sulphate

H. H. RUSTON. Second Award. Men's Class. YOUTH'S COMPANION EXHIBIT.

H. H. RUSTON. Second Award. Men's Class. YOUTH'S COMPANION EXHIBIT.



ALFRED S. FRANK. Second Award. YOUTH'S COMPANION EXHIBIT.

We will mention lastly the negative results which have been furnished by an entire series of superoxidized bodies, which we might think, a priori, ought to be substitutes for ammonium persulphate. We have noticed that a small number of these substitutes tend to convert the silver of the film into an oxide, and determine a slight intensification; others are without action on the image, employed in neutral or acid solution. The substances which we have experimented on are periodates, iodates, iodic and periodic acids; perchlorates, chlorates, perchloric and chloric acids; bromates; permolybdates, pertungstates, pervanadates, alkaline perborates.

Our conclusion is, that bodies capable of reducing the films, while attacking more rapidly the opaque than the transparent parts, are restricted to a very small number, and only act in acid solution. This list seems limited to persulphates, hydrogen dioxide and potassium permanganate in acid solution; that is, to substances capable, according to the circumstances, either of yielding oxygen or of furnishing hydrogen. These are then the compounds which, although peroxides differ notably as regards their chemical properties as reducers, act simultaneously and uniformly on all parts of the image.—"Moniteur Scientifique."

Photography in Medicine

HUGO ERICHSEN, M. D.

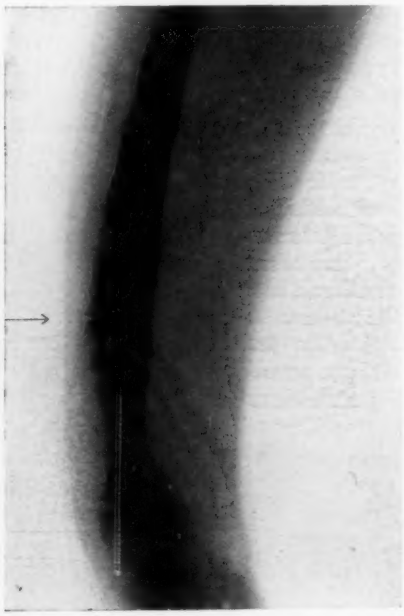
MANY physicians possess a camera, but few seem to be aware of the fact that this useful apparatus may be of advantage in a professional way. After a careful consideration of the matter, I have come to the conclusion that it is really of so much service in the practice of medicine that it should form part of the regular armamentarium of the healing art.

In order to use his photographic outfit to the best advantage, it is not necessary that a physician should be an expert in the art of Daguerre. As long as he understands the proper lighting of a subject, knows how to handle an apparatus that is not complicated and learns how to regulate the time of exposure, the developing and printing may be left to a professional photographer. Some one may suggest, why not leave the whole process to the adept of the dark art? While this would, no doubt, prove very convenient, it is frequently impracticable. The photographer would not always be on hand when wanted, and delicate persons would certainly be loath to expose their bodies before the gaze of a total stranger, although they would feel no such compunction in the presence of their family physician. Moreover, the photographer's unfamiliarity with the subject must be taken into consideration. The physician knows precisely what it is he desires to perpetuate in a pictorial form, but he cannot always transfer an understanding of the fine points involved in a given case from his own erudite intellect to the untrained mind of the photographer. Again, there is not always time to call the services of the latter into requisition. The phenomena of nature do not always wait to be photographed, but sometimes vanish as quickly as they come into being.

RADIOGRAPH. By P. M. Hickey, M. D.
Physician in charge of case doubted the presence of the needle in the wrist but the skiagraph told the story.

It being conceded, then, that it is desirable that the physician should be conversant with at least the

simpler manipulations of photography, let us see in what way he could put his knowledge to use. In the practice of surgery, and orthopedic surgery especially, a series of photographs would not only be of value as a pictorial record of the cases to which they relate, and as illustrations for a contribution to medical literature, but also as indisputable evidence in any malpractice suit that might arise. It goes without saying that a jury will more readily understand that which they can see than that which they merely hear, generally without comprehension. I believe that the expert testimony in many cases at law is wasted on the twelve good men and true. Often the mazes through which it leads are too intricate for them to follow. A photograph of a medical case is like a description that has been stripped of technical verbiage. In consequence its meaning is perfectly clear.



RADIOGRAPH. By P. M. Hickey, M.D.
Greenstick fracture of forearm. Bone partially broken at point of arrow.

The service rendered to medical science by photography should not be underestimated. That it has greatly advanced text-book illustration cannot be gainsaid. Whereas books of instruction formerly contained but a dozen or two of poorly executed woodcuts, they now fairly teem with excellent half tones, that add greatly to the value of the descriptive matter.

Whether photography is of service as an aid to diagnosis, I do not know, but I presume it might be in some cases. In some varieties of skin diseases, for instance, it is possible that the camera might detect an eruption before it becomes visible to the inferior optical perception of the human eye. Experiments in this direction, particularly with orthochromatic plates, would be of interest and might lead to valuable results.

In an article on "The Roentgen Process in Medicine," contributed to the April, 1896, issue of a current photographic magazine," I made the following statement:

"The medical importance of Prof. Roentgen's discovery of photographing through certain solids by means of so-called cathode rays should not be underestimated. Aside from its usefulness in the detection of bullets, it is destined to be of utility in various other respects, both in medicine and in surgery. All foreign objects in the human body, which are impervious, so to speak, to this wonderful light, may be discovered by means of it. In doubtful cases it will decide the diagnosis. In many cases it will no longer be necessary to have recourse to an exploratory operation in order to determine the nature of the disorder. The Roentgen process will show plainly whether calculi or stones exist in the gall or urinary bladder, and in one case

obviate a dangerous surgical operation, in the other a painful examination. Fractures will be readily differentiated from dislocations, and the orthopedic surgeon will be enabled to ascertain beyond the slightest doubt, the exact nature of the deformity which he is about to correct. It is patent that the information thus obtained will be of the greatest importance and use in the performance of an operation. To revert to fractures: in case of fracture of the skull, the photograph would show the extent of the injury, also whether there is a depression of the bone that would necessitate the application of a trephine. The detection of osseous tumors would likewise be greatly facilitated."

Again I said: "Photographs taken by means of the process will be used as evidence in malpractice and criminal cases, and may be the means of clearing many an innocent practitioner from a charge that may not only cost him dear, but ruin his practice as well, and of sending to the gallows or prison many a guilty wretch who would otherwise escape punishment."

RADIOGRAPH. By P. M. Hickey, M. D. Shows location of birdshot.

In conclusion, I observed: "As

the process or method is still in its infancy, and will undoubtedly be much improved before the various experimenters all over the world who are now giving it their attention get through with it, its scope of usefulness in the healing art will probably be increased. Some day we may hope to photograph the various organs of the human body, in health and disease, and by comparison be able to diagnose what ails them."

That this prediction has come true is abundantly demonstrated by a voluminous book on skiagraphy, as applied to medicine and surgery, that was recently shown me. It is published by an eastern firm and liberally illustrated. But it has been found that one of the statements requires modification. It is very difficult to determine the presence of stones in the gall-bladder on account of the overlapping of the liver. Nephrolithiasis, or stone in the kidneys, and vesical calculi are easy of determination when the stones are of a large size. To diagnose any change in the location of the stomach either a steel sound is introduced or a solution of bismuth is administered. In the latter event the outlines of the viscus are easily defined.

Contrary to general opinion, skiagraphy or radiography promises to be of the greatest importance in the practice of medicine and not in surgery. It has already been possible, by means of it, to establish a differential diagnosis in tuberculosis and to extend its usefulness to physical diagnosis in general. It would lead too far to indicate the various uses of skiagraphy and the many applications of the fluoroscope in the limited space at my command and in an article intended for the general public.

As some of my readers may not be familiar with the modus operandi of radiography, a brief description of the process may be of interest. The plate, in its holder or a black envelope, is laid upon a level surface, the object, as for instance a hand, to be photographed being placed upon it. A Crooke's tube is placed within 18 or 20 inches of the object to be photographed. The length of the exposure depends upon the density of the object and varies from 10 seconds to 10 minutes. The developer should be diluted three or four times, and the plate overdeveloped until it is black and no longer translucent. When the plate looks as though it had been irretrievably ruined, it is ready for the fixing solution.

At a recent meeting of the Franklin Institute of Philadelphia, Mr. F. E. Ives read a paper, in which, after remarking upon the value of microphotography in scientific work and the difficulty at present existing with the devices now in use of adjusting a microscope to a camera quickly so as to photograph an object or one of its phases at the moment wanted, he stated he had some time since undertaken the solving of this problem, and that as a result had evolved a combination instrument which in every way, so far as he could see, satisfied all the requirements.

It consists of a wooden platform, which is placed flat on a table, Upon this any microscope fits, its only object being that of affording an attachment for the camera when needed and keeping the microscope in line with it. Consequently the operator is in no way interfered with while working with the microscope, but when desiring to make a photograph he has only to attach the camera, which takes about thirty seconds, and give the object from one to five minutes' exposure, when the camera can be removed, another plate put in so as to have it in readiness, and he can immediately go on with his microscopic observations.

How to make a Lens Shade

LEON F. ELKINS

SOMETHING to shade the lens from intense reflected light, thus preventing fogging, is almost indispensable in landscape and flashlight photography. The effect has been accomplished by using a hat, holder-slide, focusing cloth, or anything at hand; but these make-shifts do not always prove satisfactory, and sometimes spoil an otherwise good negative by obtruding themselves in it.

The appliance called a lens shade, however, can be relied upon to "do the business," and I understand that a similar device to the one that I am about to illustrate is already on the market. But amateurs with whom every little expense counts can make one for themselves from materials almost always at hand, at no expense but their time. I make my shades from the tough opaque paper with which the Eastman Kodak Co. back their films, such as that wrapped around dry plates, but any opaque paper will do.

Take two pieces about 4x5 inches (if a light paper is used, more will be required to produce the necessary stiffness) and paste together, using common mounting paste, and place under a weight to dry.

Now measure the circumference of your front lens mount, and when the paper is dry, cut out a piece about 3 inches one way and 1 inch longer than the circumference the other; measure the width of the mount, and draw a line across the side of the paper representing the circumference, leaving a strip the width of the mount. Our paper will now look like Fig. 1.

Draw the lines 1 and 2 in Fig. 2, and cut out the pieces A and C, leaving B, which should be one-third

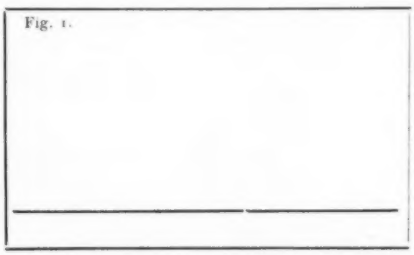


Fig. 1.

the circumference in width. Bring the ends of the strips D and E (Fig. 3) together, and after fitting the ring thus formed over the mount, paste them so that it fits just loose enough to turn in any position.

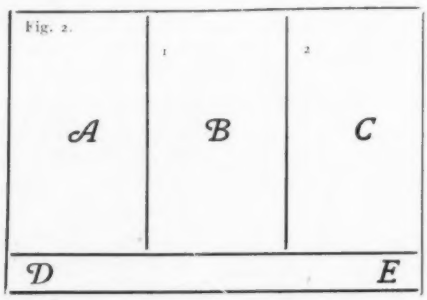
Now with the shade in place to shade the ground glass from the rays, focus the camera toward the sun. The shade is probably too long, so that it cuts off a portion of view, if so, cut from the end 1-4 inch at a time, until the whole view is visible and evenly illuminated. When the correct ad-

justment is secured the corners of the shade should be slightly rounded.

With a wide-angle lens the shade must be shorter on account of the greater angle, and with the long focus, or narrow angle lens longer. My camera is the Cycle Korona III, made and inexpensive, I think best to have one for each different angled lens.

They can also, with a little ingenuity, be adapted to the fixed focus cameras, by fitting the ring to go inside of the circular opening

Fig. 2.



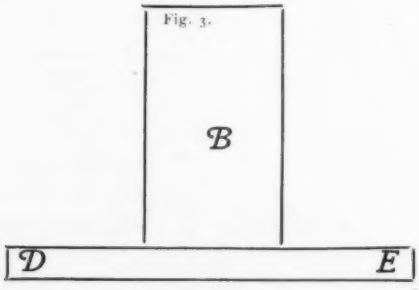
with convertible lens. For the double combination, 7-inch focus, I use a shade 1 1-2 inches long. For the front combination, 14-inch focus, the shade is 2 3-4 inches in length. I do not use a shade for the back combination, as I find the projecting front of the shutter shields the lens sufficiently.

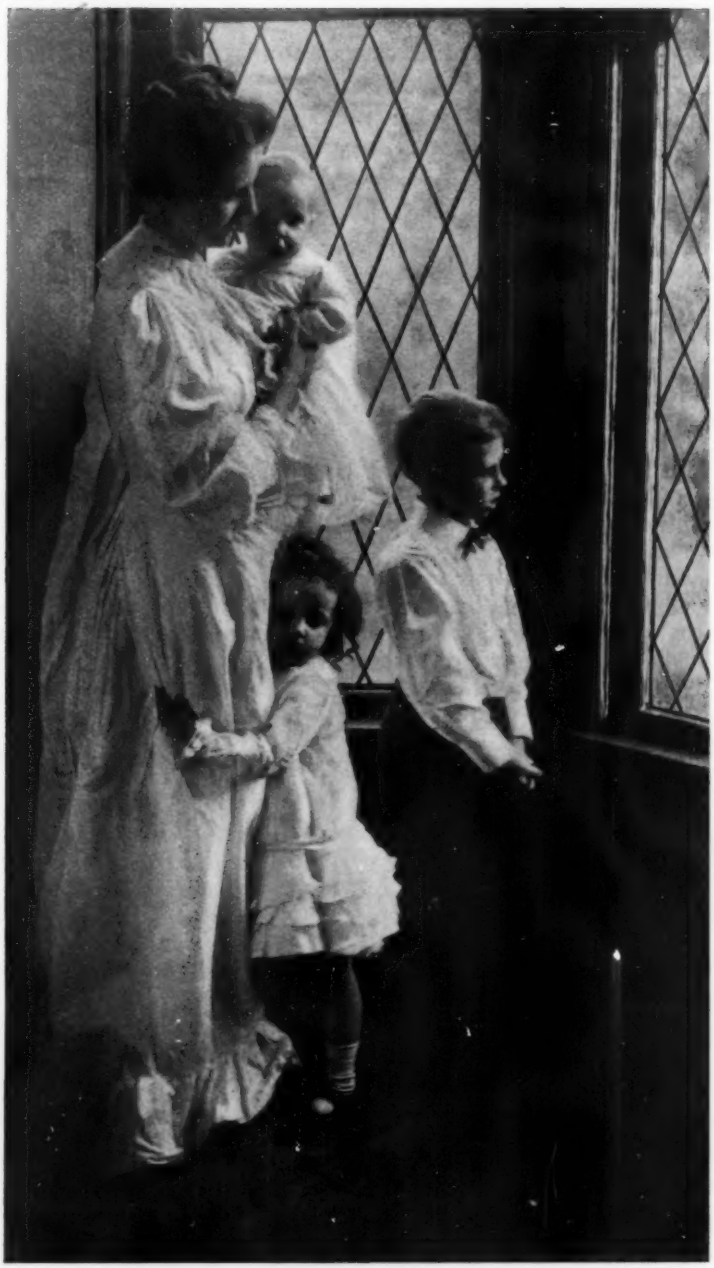
These shades can be made adjustable, by fitting a second strip of paper to slide back and forth, thereby making the shade longer or shorter, but as they are so easily where the lens is placed.

The shade will be found invaluable in photographing towards the sun, and also in destroying the effects of reflected light in snow scenes and water scenes. In flashlight work, it admits of placing the flash further in front of the camera, thus greatly increasing the range of lighting effects.

Many other uses could be given, but these will be suggested to the amateur as occasion arises, and are easy of application.

Fig. 3.





SARA W. HOLM. Special Award and First Award. YOUTH'S COMPANION EXHIBIT.

The Rendering of the Planes in Landscape Photography

HUBERT MCBEAN JOHNSTONE

Though realizing most thoroughly that, as Rudyard Kipling says in his "General Summary,"

> "The artless songs I sing
> Do not deal with anything
> New or never said before,"

it nevertheless seems to me that on the subject of accurate rendering of the different planes that exist in an ordinary landscape, there is much that might well bear repetition and lose nothing by it. In the quest of pictorial effect in this class of work, perhaps the first point needing enforcement is that everything from foreground to background is not to be of one degree of sharpness, all equally harsh and vigorous. In order that proper atmospheric effect may be had, the different distances ought always to be more or less subdued and softened by the haze ever present in the air, for as A. H. Wall puts it, "Atmosphere is the great harmonizing element of a picture; it is the eye's music giving order and proportion. It supplies the prevailing tone, high or low, and with it the prevailing sentiment or feeling. A rich effect or a simple one may be made to prevail by its judicious introduction, selection or treatment. Without atmospheric peculiarities or characteristics, a landscape picture seems flat, monotonous and uninteresting. The photographer who goes to the study of nature as an artist or poet does, reverently, and with trained perceptive organs, will find the pleasure and delight of his work largely increased, even if he

WESTERN SCENES. By M. Crowe. Youth's Companion Exhibit.

does not realize what Shakespeare calls 'the utmost reachings of his soul.'" Of course should the desire be merely to secure a photograph of general topographical excellence such as a surveyor might desire, it is necessary that the whole negative possess as much detail as possible, in fact, that it be not divided into planes at all.

It seems to me, after having put into practice methods almost innumerable, that although good results may be achieved by suppressing the detail, distributing the focus so as to picture the masses only, and trying various other means, nothing can be secured that is quite equal from a pictorial standpoint to the scene photographed under actual conditions, providing of course that these be appropriate. To make the picture worth anything this necessitates that there be infused into its atmosphere that subtle indescribable quality which is capable of making it appeal to the imagination and gratify the senses. One should not go out in the middle of the day when the sun is high overhead to catch this feeling. Rather must one go in early morning or late afternoon, when long wavering shadows creep across the dew-laden meadows and vague sentiments and romances lurk in the mists on every hand. The argument may be advanced that one cannot photograph a sentiment, because it is a thing that appeals to one's senses and not to one's eye. I contend that this is wrong. One can, provided one knows how and is gifted with a certain temperament.

Perhaps after settling the hour, the most important question requiring consideration is the item of focus, for in this it is very evident that there must be certain points needing to be emphasized, while others have to be subordinated. As a general rule, these principal points that have to be accentuated are to be found in the foreground, and then they will almost always have to be made sharp. But just because one reads somewhere that the principal object should always possess razor-edged definition, it is not well to fall into the error of eternally bringing out hair-lines. To say that the principal object must always be perfectly sharp and clear is a mistake. There are other methods that may be employed to give it the requisite prominence, for supposing that the principal point of interest lies well back toward the middle distance, and the focus is set for it regardless of anything else, there is going to exist in the resulting photograph a state of affairs that is absolutely false. Foreground and background will be out of focus with the middle distance sharp. This is unquestionally wrong.

In order to make the most of the depth of focus of the lens, the following rule that I have advocated from time to time, ought to be adopted. First, without any diaphragm, get into focus that most distant object that is desired to be sharp and then put in place the stop that it has been decided to use, noting the exact point nearer than the one first taken, where absolute sharpness ceases. Take the stop out and after focusing carefully on this latter point, reinsert the diaphragm and the operation is finished. This method of working will secure sufficiently fine definition where it is desired and yet not falsify values.

Suppose that the scene it is desired to secure on the plate consists of a strongly marked foreground, a flat, impossible middle-distance and a background filled with hills half hidden in a veil of faint blue mist. The difficulty lies in the fact that the distance, having so little local coloring, is extremely apt to be all washed in with the sky to the obliteration of any trace of a horizon line. True, it is not necessary that

the horizon be very strongly marked but it must show a little. Some one has suggested that in such an event, the best method of procedure is to make two negatives identically the same, exposing one for distance and the other for foreground. While theoretically and practically this may be possible, in nine cases out of ten, what will the resulting print look like? No matter how excellent the combination, few ever succeed in getting results that do not look patchy and are as true as a print from a single negative. After all, then, the question resolves itself into how to produce one negative with proper gradation between sky and foreground. Considering that the veil causing all the trouble is due to the presence of a semi-transparent, blue mist, it is possible to a certain extent to remedy the difficulty by the use of an orthochromatic plate and ray screen. There is, however, a better plan still. The object is to bring the hills up to within speaking distance, as it were. After the negative is made, make from it by contact a positive on glass, and then from that another negative. This is an extremely simple process, and the only point necessary to bear in mind is to make the exposure of just sufficient duration to reduce the contrasts and at the same time to preserve the details.

The rendering of plane values in winter work, is still more difficult. Of late I have been trying a series of experiments with orthochromatic plates and color screens of varying strengths, and although I have hitherto rather strongly advocated their use in this branch of photography, I have come recently to the conclusion that ordinary plates are preferable. Mr. Osborne I. Yellott I note is in favor of orthochromatic plates for this purpose, and although, judging from the winter work he exhibits, he makes a success of it, I am obliged to confess that I cannot succeed in securing anything quite soft enough to please me. As an argument in favor of ordinary plates,

CASTLE SAN ANGELO AND ST. PETER'S CHURCH, ROME.

JEANNE E. BENNETT. Second Award. Women's Class. YOUTH'S COMPANION EXHIBIT

JEANNE E. BENNETT. Second Award. Women's Class. YOUTH'S COMPANION EXHIBIT

just the other day I was looking at a picture by Mr. J. Francis Strauss, made without a color screen, of a fluffy snowbank around a bunch of shrubs with a tall birch tree in the foreground, whose white bark stood out boldly and clearly and yet without any harshness. It was inexpressibly delicately rendered, too much so to reproduce, and bore all round a charm impossible to catch on an orthochromatic plate. Mr. Strauss himself tells me that nothing so pleasing could be secured with a color screen. Of course in winter work, where it is desired to show up distance by perspective instead of by aerial peculiarities, the orthochromatic plate and color screen may be useful. For soft effects, however, full of feeling and daintiness, it is absolutely worthless.

A negative intended for the purpose of showing all the different planes of a landscape, intended to be purely pictorial and not topographical, must be thin with no solid high lights, and with that delicate veiling that lends such an indescribable charm to the finished picture. There must be no clear glass in the shadows and no unprintable density in the high lights. A strong foreground and delicate distance is highly desirable. In other words, like a lantern slide, it requires the utmost tonality combined with the greatest translucency, and to get this development must be carried on with a solution admitting of unlimited control. This, of course, bars all one solution developers as well as all with which the worker is not thoroughly familiar. Suppose one begins with a very weak pyro-soda solution, to which has been added a minute quantity of potassium bromide. The distance will soon appear and may be washed over with a restrainer. Keep the developer in the foreground with occasional tilts of the dish to wash the sky and prevent the formation of a definite line. The foreground will now be coming up, and if this is the case the operation will be automatic and require but little alteration, other than perhaps giving the requisite density by the addition of small quantities of pyro-soda from time to time. Another method is to employ an extremely dilute developer, treating the negative as previously mentioned, and then when a mere ghost of an image is secured all over the plate, to change the solution to one containing a normal proportion of accelerator, and thus obtain uniform density and no fog. It is very necessary to avoid overexposure, as even if a very strongly restrained developer be used there will necessarily be considerable fog and a poorly defined distance. This method would also result in a slow printing negative. But why go farther on the developer question? That is a matter apart. It is important that all developers be used rationally, and with a view to certain definite effects, a fact which we all know very well. Certainly this is the only way to ever expect to get the best out of a plate.

PERCY LUND

A WEEK or two ago I was present at a club meeting where the chairman, in announcing forthcoming events, said to the members, "Bring your failures if you have any." The idea was to have a sort of conversational meeting where novices could get their more experienced fellow members to explain any errors or difficulties that had arisen in their practice. That the members had no lack of failures goes without saying, but I cannot help wondering how many would venture to bring them to the fire of general criticism. Probably very few. Somehow men are not easily induced to show the weak side of their work. At school it has always been wrongly considered a sad disgrace to make mistakes: why, I am unable to say, since to err is human; and I fancy children of older growth have not forgotten teachers' harsh comments, or the sneering glances of their comrades, and that makes them chary of exhibiting their errors when in later years compulsion is removed. At all events in my experience of the club-room, I have only found here and there a man who cared to have his productions criticised, however generously. He prèferred to delude himself with the idea that they were perfect, and so live for the time being in a little heaven of his own construction. Perhaps this is pardonable, for in the world's wheels there is much sand, and naturally men like to find smooth places when they can. But one of the first steps out of mediocrity is on to the island of invulnerability where the critics' shouts reach the ears and the mind, but do not distress the heart. My advice to all photographers who aim at something beyond the ordinary thing is to frequently invite criticisms upon their own productions, but not to take offence if in the eyes of others they have not that charm which their own eyes found in them.

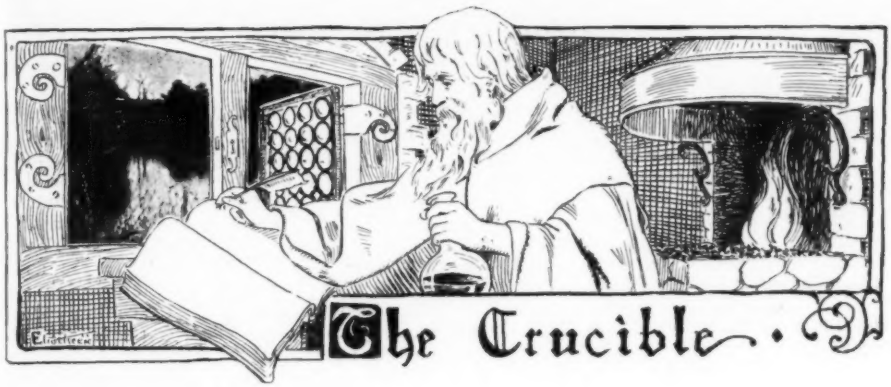
Now, in regard to failures, one of the most conspicuous to be seen in amateur work is the failure to print in an effective sky to landscape pictures. The novice neglects this part of the performance altogether, and considers his prints finished even if they show an absolutely white sky. As a rule when a negative is taken in the ordinary way, it will be found upon developing to be without printable clouds, because the sky being so full of light, acts more rapidly on the plate than does the landscape, with the consequence that this part of the plate is really vastly overexposed when the remainder of the view has reached a proper length

of exposure. It is found, therefore, on developing, that the resultant negative becomes so thick in the sky portion when the landscape has reached proper density, that it will give no detail when the photograph is being printed. Moreover, how often do we find that when an exposure is being made the sky is absolutely cloudless. Now to represent either the deep blue or the beautiful clouds of the heavens by white paper is anything but truth, the so-called infallible photographic plate being at fault in this case. To compensate for the deficiencies of the plate there are several means not difficult in practice, whereby clouds can be added, or something of the appearance of the deep blue sky imparted, and no conscientious photographer should shirk this part of the work. The usual method of producing the effect of deep blue sky is by what is known as "sunning down." This operation may be described briefly as follows: After the print has been exposed behind the negative in the usual way until sufficiently deep, take it out and lay it upon a table near to the window, with the foreground towards the source of light. Cover it up partly with a piece of cloth or a duster, leaving the sky part exposed to the light. Every minute or so gradually move the cloth further up the sky until the zenith is reached, being careful to keep all the rest of the print covered while this operation is going on. You can thus produce a graduated sky, light on the horizon, and getting gradually darker towards the zenith. Such a representation approaches more accurately the natural sky than white paper. On the other hand some care must be taken not to sun down too deeply.

As to clouds, these also must be printed after the landscape by a secondary proeess. Cloud negatives can be bought from all dealers ready made; or, on the other hand, the photographer can make for himself a series, giving very short exposures and leaving the landscape out of consideration altogether. Then comes the practice of double printing. First mask the cloud portion of the ordinary negative by means of a cloth or duster in the same manner as previously described, so that if the sky should be a little thin no degradation of the print will occur. You will then have a print with a perfectly white sky. Now place this behind the cloud negative, and carefully cover up the remainder of the view with a cloth, carrying printing on until the clouds seem sufficiently strong. Should the horizon line be very irregular, the cloth method will probably not be sufficiently accurate, and resort must then be had to a mask cut out of black paper pasted on to a waste print, so as to follow the exact outline. This is placed very precisely upon the negative over the landscape portion. The operation is one which requires a little practice, but no conscientious photographer will avoid it, though he may content himself occasionally, for the purpose of expedition, with the somewhat similar sunning-down method previously described.

Now that films are coming into more general use, a varnish for films is likely to be required. The following formula can be recommended: White hard varnish, 10 ounces; strongest liquid ammonia sufficient to just dissolve the precipitate first formed; water, 5 ounces.

The film is varnished in the ordinary way, but without being warmed.



ON THE COMPOUNDING OF DEVELOPERS

In the reading of photographic literature the chemist notices particularly the loose way in which developer formulas are made up. Apparently every man who tries a developer deems himself fitted to make a new formula, and the general way of doing this, apparently, is to add a little of any old thing, until the result suits the man who is doing it, and then to publish a new formula. Every chemical which is added to a developing bath should be put there for some purpose. For example, sulphite of soda is added to serve as a preservative for the developing substance, keeping it from too rapid oxidation. Metabisulphite of potassium is used for exactly the same purpose. The difference is that the metabisulphite contains, weight for weight, a much greater percentage of sulphurous acid, which is the active agent. This salt is strongly acid, and must be neutralized by the alkali, so that there is not very much gain in the total amount of salts necessarily put into the developer. I find in the "American Amateur Photographer" this formula for lantern slides:

Ortol	160 grs.
Potassium metabisulphite	80 "
Potassium bromide	40 "
Sodium sulphite	2 1-4 oz.
Sodium carbonate	1 1-2 "
Water to make	10 "

Now only one sulphite is necessary, and the formula recalculated for each, taking into consideration the alkali necessary to neutralize the metabisulphite, is as follows:

Ortol	160 grs.	160 grs.
Metabisulphite		2 oz.
Potassium bromide	40 grs.	40 grs.
Sodium sulphite	2 1-2 oz.	
Sodium carbonate	1 "	4 oz.
Water to make	10 "	10 "

A still worse example, and one which it would be hard to beat, is that recommended by Edwards & Co. for their "Crystal" lantern slide plates, for red tones, which I quote from the "Revue Belge de Photographie," and give below, together with a recalculation:

	Orig.	Recal.
Eikonogen	2.5 g	2.5 g
Hydrochinon	1 g	1.0 g
Sodiom sulphite	14 g	14.0 g
Potassium carbonate	7 g	4.9 g
Potassium bromide	1 g	
Citric acid	2 g	
Ammonium chloride,	28 g	38.1 g
Ammonium carbonate,	14 g	
Hydrochloric acid	14 cc	
Water	1000 cc	1000 cc

It will be seen that this formula calls for an enormous amount of ammonium chloride, a restrainer peculiarly adapted to the obtaining of red tones after strong overexposure. It also calls for ammonium carbonate and hydrochloric acid. There is more than enough acid to neutralize the carbonate, consequently we merely add the equivalent ammonium chloride, and we also for simplicity transform the minute quantity of potassium bromide into ammonium chloride. As potassium citrate is an absolutely inert substance in a developer, we suppress the citric acid, with its alkali equivalent. Citric acid may be used as a preservative in a two solution developer, but is simply useless when mixed with the alkali in a one solution developer. It thus appears that this developer, like all others, when reduced to the lowest terms, consists of reducing agent, preservative, alkali, restrainer, and solvent, and no developer needs more than these five constituents.

Notes and News

SAN FRANCISCO, CAL. At the annual election of the California Camera Club held April 8, 1902, the following officers were elected: President, W. B. Webster; first vice-president, H. B. Hosmer; second vice-president, J. J. Lermen; secretary, W. E. Palmer; treasurer, E. G. Eisen; librarian, I. O. Crosscup; corresponding secretary, C. A. Goe.

CAMBRIDGE, MASS. The Old Cambridge Photographic Club had their ninth annual exhibition April 19th to 24th. The pictures were of the usual uniform excellence which has always distinguished the exhibitions of this club, but especial mention should be made of the work of Miss Mary Devens. This lady has rare skill in selecting and arranging her subjects, and by the use of ozotype and gum she produces exquisite works of art, photographs of such delicacy and artistic feeling that it is difficult to realize that any mechanical agency had a part in their making. Awards for excellence were given to Miss Devens and Miss Percy S. Thaxter for two prints each, and to Misses Margaret C. Leavitt, Caroline E. Peabody, Jennie R. Woodbury and Messrs. Philip P. Sharples, J. G. Thorp and James A. Wells for one print each

LOS ANGELES, CAL. The Los Angeles Camera Club will hold a photographic salon in the beginning of May. There will be in session there also the General Federation of Women's Clubs, which will bring together 6000 women from different parts of the United States to the city. At the same time La Fiesta de los Flores, the Foresters' Encampment, and the big Masonic fair take place, so the city, it is expected, will be full of visitors from every State in the Union. They will spare no expense to make the salon a grand success.

PROVIDENCE, R. I. The fourteenth annual exhibition of the Providence Camera Club was held during March in that city, and far exceeded in beauty anything thus far attempted by this time honored club. There were twenty-two honor pictures contributed by the president, C. M. Lee, Miss Sarah J. Eddy, D. H. Thornton, Miss Ruth Anthony, Oliver Greenway, Woodbury and Mrs. Polleys, A. W. Howe, Howard Richmond, and scores of others.

AKRON, OHIO. The fourth annual exhibition of the Akron Camera Club took place during the first week in April. It was one of the most successful ever given by the club, including 66 prints from the Chicago Society of Amateurs and 20 from Clarence White of Newark. The newly elected officers of the club are as follows: President, Prof. C. M. Knight; vice-president, Dr. J. L. Lee; recording secretary, John W. Schouler; treasurer, E. J. Hoskins; corresponding secretary, Chas. F. Smith; directors, Geo. F. Kunz, Edmund Glantz and Frank B. Hargett.

ARTINO SINGLE TONER Is the name of a preparation which is just being put upon the market after four years of private testing by the manufacturers, the Artino Toner Co. Artino will appeal to the photographer through its merits of simplicity of manipulation, rapidity and inexpensiveness. A toning of from fifteen to sixty seconds is sufficient, and produces a sepia tone of great permanency on either Aristo, Aristo platino or any collodion paper. Both the lazy man and the busy man will be pleased with the toner. It will also be useful for fixing proofs so they may be freely examined without the risk of fading on exposure to light. An added advantage is the fact that Artino may be used repeatedly, making the cost insignificant.

The Goerz Anschutz Folding Camera, a wonderful instrument for obtainining full timed results where speed is essential, made by the manufacturers of the famous Goerz Lens, is now offered. It is fitted with the Goerz Lens and Focal Plane Shutter, and is compact and light, and equal to any photographic problem that may present itself. Not one feature is sacrificed for compactness and lightness. If you wish to learn more, write to C. P. Goerz Opt. Works, 52 E. Union Square, N. Y., and a descriptive catalogue, telling you all about it and showing many results made with it, will be sent you.

We have received from the Blair Camera Company of Rochester, N. Y., copy of their 1902 Catalogue in which they illustrate and describe a number of new features in camera construction, most noticeably the Nos. 3 and 4 focusing Weno Hawk-Eyes. These cameras are a new departure in camera construction and have the advantage over other film cameras of focusing upon a ground glass the exact size of the picture, and still at the same time being able to load and

unload in broad daylight with either perforated or kodak film. This design will meet the demand of the advanced amateur and supplies a long-felt want. Catalogues fully describing the advantages of this and other cameras will be mailed upon application to the manufacturers.

PHILADELPHIA, PA. The Photographic Society now in its fortieth year of existence, at its annual meeting April 5, elected the following officers: President, Walter P. Stokes; vice-presidents, Anthony W. Robinson, Samuel Sartain; Secretary, Charles S. Pancoast; treasurer, Wm. S. Vaux, Jr. Directors, C. Yarnall Abbott, Prescott Adamson, Henry T. Brown, Joseph H. Burroughs, S. Hudson Chapman, Howard W. Du Bois, George D. Firmin, Charles E. Frick, Morris E. Leeds, Wm. H. Rau, Wm. H. Roberts, Wm. C. Stevenson.

The reports of the directors and treasurer showed the society to be in a flourishing condition.

OHIO-MICHIGAN CONVENTION. The Convention of the Ohio-Michigan Photographers Association will be held at Gray's Armory, Cleveland, Ohio, August 27, 28, 29, 1902. The classification of exhibits is First, a special cash prize class open to the world, $150.00 in gold. $75.00 first prize; $50.00 second prize; $25.00 third prize.

Exhibits must consist of 3 framed photographs, measuring 13 inches or larger. Any photographer, whose dues are paid, may compete in this class. Those outside of our states must pay dues of $2.00, thereby becoming associate members. Second, a general exhibit class for Ohio-Michigan active members. This exhibit is for study and comparison, it being expected that every member is interested in the welfare of the association and will send some of his productions, thus securing the benefits which can only be obtained by comparison of his work with that of others.

Third, the salon class (started in the Ohio Association in 1895). All pictures by active members are eligible for salon honors. They are selected for artistic qualities, and each member having one or more selected will receive a certificate of honor signed by art judges, testifying to artistic excellence.

Finally, there is the interstate exhibit. This traveling exhibit is made up of pictures from each state association. Each association being represented by one picture which has been selected as being the best exhibited at their last convention. Rules may be had on application to the secretary, Mr. F. C. Clark, Detroit, Mich.

CLEVELAND, OHIO The annual Case Library Exhibition was held in this this city from the 14th to 24th of March. Carl E. Semon, C. Yarnall Abbott, F. C. Baker, W. F. Higbee, well known names, were among the contributors.

BROOKLYN, N. Y. The Department of Photography of the Brooklyn Institute of Arts and Sciences, opened its twelfth annual exhibition with a private view and reception on April 19. The exhibition was fully equal to those held in previous years, and speaks well for the interest and ability of the members.

DES MOINES, IOWA The twelfth annual convention of the Photographers' Association of Iowa will be held in Des Moines, May 20 to 23. Prizes are offered in nine clssses, all professional, and all but one restricted to residents of Iowa.

BOSTON, MASS. The Boston Camera Club held its fourteenth annual exhibition from April 8 to 19. The pictures were 74 in number from 18 members. No awards were made. The two exhibits deserving of special commendation were those of Gurdon R. Fisher and Miss Sarah J. Eddy. Wm. R. Cabot's "Gulls Feeding" is a marvellous picture of several score of birds in every possible position of flight, taken at very close range. It is by far the best picture of birds in flight that has ever come under our notice.

WASHINGTON, D. C. The Capital Camera Club of this city will hold their eleventh annual exhibition, in the Corcoran Gallery of Art, from May 7th to 14th, inclusive. The following artists will act as a jury of selection, Richard N. Brooke, Hobart Nichols, Max Weyl, J. H. Moser, Mrs. Robert C. Child, Miss Mathilde, Mueden, Miss Julliet Thompson.

BOSTON, MASS. The regular Spring opening of new cameras and photographic outfits will take place at Jordan Marsh & Co's. store in Boston, on May 12th to 17th inclusive. The unlimited means and well known enterprise of this house is sure to make this exhibition one of much interest.

The Ideal Lantern of A. T. Thompson & Co, 25 Bromfield Street, Boston, may be used on any incandescent system of lighting, and no lantern slide exhibition is complete without it. The prices ranging from $35.00 to $300.00, place it within reach of every camera club in the land. Write for Catalogue D. which is mailed free on application.

The Round Robin Guild

Conducted by Elizabeth Flint Wade

(Any amateur photographer may belong.)

SPRING LANDSCAPE. J. E. Ross.

HEADLIGHTS AND DEADLIGHTS.

"Bless me! what is it?" said one friend to another, as they stood looking at a photograph so underexposed and underdeveloped and overprinted that it was hard to distinguish where form began or ended.

"Oh, that,' was the reply," is one of those things that I call 'Browningesque photographs,' because nobody knows what they are but the man who made them."

Now doubtless the readers of the April number of this department were somewhat surprised to be advised to avoid strong "headlights" in their pictures. The use of the term was a typographical error, but possibly it is not so much of a misnomer after all. The highlights in some pictures might well be called headlights. They thrust themselves forward, challenging the eye and causing it to ignore the rest of the picture in much the same way as the headlight on an engine dazzles the sight and prevents one seeing the train which bears it.

If one must avoid "headlights" he must equally avoid "deadlights," a term which might be given those pictures which the critic ironically termed Browningesque photographs, so low in tone and faint in outline that the eye gropes its way from point to point, building up the subject by degrees instead of being able to see it at once as a whole and studying the details afterward.

Then as if such a picture was not enough in itself a trial to the eye, it is perhaps mounted on half a dozen or more different kinds of paper, one shade being superimposed upon the other until the print is bordered with the different lappings to the width of half an inch, and this in turn pasted to a larger sheet of perhaps an abominable green or a startling orange.

Sometimes the beauty of a picture is enhanced and its points much better brought out by having a narrow edge of some dark self colored paper used as a narrow border between it and the larger mount. The width of such a border should rarely exceed an eighth of an inch, and it should harmonize with the tone of the picture and with the mount on which it is placed. It takes a trained artist to superimpose one color on another in the manner described, and have the result anything but inartistic and eye-distracting. The picture's the thing, the mount should never be obtrusive enough to thrust itself on the attention.

PICTURE HISTORY MAKING.

Our Historical Guilds grow apace. It takes time to organize such a movement, and it takes energy and perseverance to

carry it on. But with such a body of workers enlisted as are the amateur photographers the thing is sure to be a success. Letters are continually reaching the Guild of clubs formed and work begun and being pursued with vigor and enthusiasm. One of our members, who is to be the historical photographer in Norwich, Conn., writes that it is a very rich historical center. It is the birthplace of Lydia Sigourney, Edmund Clarence Stedman, Benedict Arnold, John J. Slater, David D. Well; here are the graves of Uncas and Miantimioh; the largest stone in the world — the Cochegan Boulder — is in the vicinity, and the largest elm in the United States— the "Greene" elm — is in the town. Truly, enough material for a good bit of picture history.

The mention of the Greene Elm reminds one of the suggestion of Oliver Wendell Holmes, that someone should get up a work to be entitled "Sylva Novanglica. Photographs of the New England Elm and other Trees taken upon the Same Scale of Magnitude. With Letter-Press Descriptions, by a Distinguished Literary Gentleman."

Prof. Holmes' idea was to have the same camera used in making the photographs and to have it placed at a certain fixed distance from each tree. His suggestion, original as it was, and as attractive, has never been carried out, but there is no reason why our Historical Guild might not work along this line and do something in the way of photographing historical trees, gathering all the data concerning them and publishing the collection in book form. This work could be done only by co-operation. No single individual, no matter how willing he might be to undertake it, could carry it out unassisted. Then photographs and data being complete the work could be published by the PHOTO ERA. The present month and June are the best months for photographing trees. The foliage is of a much lighter color, the lights softer and the shadows more transparent than later in the season when the foliage has ceased growing.

The photographs should be made on a plate at least as large as 5x7 and 8x10 would be much better.

Who will be the first to begin the work of the "Sylva Historica"?

PREPARING TINTED SENSITIVE PAPERS.

Preparing sensitive papers for photographic work is a most interesting process and one very easily acquired. These papers sensitized with a preparation which gives soft tints in the finished print are very effective for decorative photography, having the appearance of a wash drawing, owing to the delicate tone of the print when finished.

By using salts of uranium one may obtain a number of different tones by varying the solutions in which the prints are developed. Uranium is a metal which takes its name from the fact that it was discovered shortly after the planet Uranus, and named in honor of that planet. It is converted to nitrate by treatment with nitric acid, and the manner of using is very similar to that of the ferric or iron salts.

To prepare a paper which will give red tones in the print, take 192 grains of uranium nitrate and 8 ounces of water. Prepare this solution the night before needed. When ready to use, pour it into a flat tray and float the paper on the solution for one or two minutes, drain and dry in a dark room. If dried by artificial heat the paper is much more sensitive to light, and whenever it can be done it should be dried in this way. This is a developed paper so the first prints must be experimental in order to find the correct time of exposure. Ten minutes in bright sunlight for the ordinary negative is none too long for the exposure. To develop, make up a solution of red prussiate of potash allowing ten grains of potash to each ounce of water. First wash the print in hot water for a half a minute or until it is quite warm. The water should be about 125° F. Lay face up in a clean tray, and pour over it enough of the potash solution to cover it completely. Keep the tray in motion in the same way as when developing plates, so that the surface may be affected equally. In a moment or two after the immersion in the potash the picture will begin to appear and will develop up into a beautiful red, something of the tone called ox-blood red, and the print will be deeper or fainter according to the length of time it has been exposed to the light.

As soon as the right tone has been reached and detail is well out, drain and wash in several changes of water until all traces of coloring matter in the water has disappeared, then dry in the same manner as other prints.

Violet tones may be obtained by taking the print made on the sensitized uranium paper, soaking for a minute in warm water, and instead of developing with prussiate of potash, developing it with gold. Make up a solution of 8 grains of chloride of gold and four ounces of water. This should be made two or three hours before using. Take the print from the warm water, and placing it face up in the toning tray, turn over it the gold solution, rocking the tray to and fro to keep the solution flowing over it evenly. The picture when it develops will be of a

beautiful violet tone, if the exposure in the printing frame has been long enough, if not the tone will be more of a lavender or heliotrope.

To obtain a green tone, develop a print in the same manner as directed for making a red print, and as soon as the print has washed long enough — that is until all trace of coloring matter is washed out — immerse it in a ten per cent solution of nitrate of cobalt for one minute, remove, drain and dry by the fire, and the red will change to a beautiful green tone. The fire should be quite hot, as the greater the heat the more intense the color. This color is not permanent, but may be made so by fixing the print in a bath made of water 8 ounces, sulphate of iron 1-4 ounce, sulphuric acid 1 dram. Let the print remain in this solution one minute, rinse well and dry by heat.

In immersing the prints in the different baths it is wiser to use rubber finger tips or to handle the paper with the long clips made for this purpose.

While tinted papers are not suitable for general photographic use, they make attractive mediums for decorative purposes.

Some flower negatives are very effective when printed on violet tinted paper, and the green when used for a negative of a cluster of leaves, ferns, etc., has much the effect of a water color, the different degrees of light and shade in the negative giving the effect of different tones of green.

MT. CHOCORUA.

"I should so much like to know about some of the pictures you reproduce in the PHOTO ERA; for instance, 'Mt. Chocorua' on page 337, in the March number. The kind of camera used, the lens, the time of exposure, and if taken with the ray screen. It is very fine, I think."

The above is one of several similar letters received, and we take pleasure in giving the data furnished by the artist who made the picture of Mt. Chocorua. The time of year was June 1st. The kind of camera used was the Rochester Universal Camera, size 6 1-2x8 1-2. The lens was a Ross Rapid Symmetrical. The exposure was the quickest that could be made with a Prosch shutter. A ray filter was used, and the plate was a Cramer Instantaneous Isochromatic. The picture was taken directly after a storm. The mountain had been hidden in clouds for a week, and the clouds had just lifted and were breaking away when the exposure was made.

Now we all know what the reply was which the famous painter made when asked what he mixed his paints with to produce such charming effects. "With brains, sir, with brains!" was his answer.

ANSWERS TO CORRESPONDENTS.

Kenneth E. Blair.—To become a member of the Round Robin Guild send name and address to the editor signifying your wish, and a ticket of membership will be forwarded you by return mail. In the November, 1901 number of the PHOTO ERA, you will find outlined the plan of the Guild, its rules and regulations and its privileges. Your ticket with circular has already been forwarded to you. You have beautiful trees in Canandaigua, and the place is rich in historical associations. Can you not begin the work suggested in this number, and send us photographs and data concerning some historical trees in your locality?

Alice D.— Yes, it is much wiser to stick to one style of photograph or to one subject uutil you have mastered it. The photographing all sorts and conditions of subjects may do for the expert who understands lenses, exposures, plates, etc., but for the beginner, or to one not well versed in the art, it is a waste of time and money to try to take the whole world. It is better at first to be "bounded by a nutshell." Why not make a specialty of flowers? Those charming subjects always hold still, and never turn their heads at the wrong moment, or arrange their gowns or do any one of the dozen things that the figure study does at the most critical moment of the photographic work.

G. F. G.— One way to use spoiled plates is to free the gelatine with which they are coated from the blackened silver, then to immerse the plate in a sensitizing solution similar to that used for blue prints, and make blue transparencies. If you would like the formula, write to the editor of this department and it will be sent you.

John M.— Platinum prints are considered the most permanent prints made. If properly treated it is claimed that the print will last as long as the paper on which it is made. By proper treatment is meant, of course, the developing and fixing. Carbon prints are equally as permanent, but they are much more work and more expensive than the platinum.

Helen F.—The print which you enclose is from a good negative technically speaking, but a very poor one artistically speaking. The side of a clapboarded house will never under any circumstances make a suitable background either for single figures or for groups.

Announcement of the PHOTO ERA Exhibit for 1902

IN order to encourage, stimulate and develop the Art of Picture making, and to enable people to see more and more clearly the beautiful and picturesque in the every day scenes of life, the PHOTO ERA has decided to offer a series of cash prizes for the best pictures submitted in each of the following classes, viz.: Landscapes, Marines, Clouds, Portraits, Genre Studies and Architecture.

AWARDS

Six cash prizes of $10.00 each will be awarded for the best pictures in each of these classes, and a grand prize in addition will be given for the best set or group of photographs submitted in any or all these classes. This award will consist of a solid silver loving cup, beautifully wrought and lined with gold, valued at $50.00; to become the property of any contestant who wins the grand prize award two years in succession.

SPECIAL AWARDS

A special award will be given for the best set of Historical Pictures submitted before Nov. 1, 1902, which should be photographs of places and persons of general historic interest and not often photographed. The award in this class will be a cash prize of $10.00.

CONDITIONS

Competitors may send in as many prints as they wish, provided each exhibit has the following entry form cut from this Magazine, and attached to the print.

Each print should be suitably mounted, and may be passe partouted, framed or unframed.

In no case will prints be returned unless stamps are affixed to the prints.

All prints to be eligible should reach this office before Nov. 1, 1902.

ANNUAL PHOTOGRAPHIC CONTEST

Exhibitor_____

Address_____

Title of Picture _____

Description: Time of day_____ Light_____ Lens_____

Stop_____ Exposure_____ Plate_____

Developer_____ Printing process_____

PHOTO ERA Contest_____ 1902.

PHOTO ERA

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N. E. Convention The Sixth Annual Convention of this vigorous association will be held in Copley Hall, Boston, from August 20th to 22d, inclusive. A special feature of this year's exhibit will be a representative exhibition of photographs made in New England. To this end they have extended to the amateurs an invitation to unite with them and make it "the finest exhibition of photographs ever held in this country." It was the first photographic society to abolish the prize system, believing it to be more beneficial to have pictures exhibited solely for inspection and education. It now takes a still more advanced position by inviting the amateurs to co-operate with it. A picture is wanted from one or more amateurs in every town in New England. The only rule governing the exhibition is that each exhibitor shall send but one picture. A charge of $1.00 is made as an entrance fee to cover the expenses. Each exhibitor whose work is deemed of sufficient merit by the judges will receive a diploma or certificate of honorable mention. Information may be had on application to the secretary, Geo. M. Bolton, Rockville, Conn.

Photography and the Schools Interest in the adoption of photography as an educational appliance, continues to grow apace. We are daily in the receipt of letters from progressive teachers all over the country, detailing the successes and asking for further instruction. Now, in order to stimulate this growing interest, we offer, FREE, a No. 2 Brownie Camera to any teacher who will arrange to award same as a Prize in a class competition. Not more than one camera will be given to any one school. Applicants will give, in addition to their own name and address, the full name and address of their school, state average number of pupils in attendance, and send this information to the Editor of PHOTO ERA. On receipt of letter, the camera will be forwarded as per above liberal offer.

Anthony's Bulletin Beginning with the May issue, "The Photographic Times" of New York, will absorb "The Bulletin." The new publication will be known as "The Photographic Times-Bulletin," and will be under the editorial charge of Walter E. Woodbury, former editor of "The Times." The passing of "The Bulletin" is like the loss of a familiar face, and will be greatly missed from the field of photographic journalism in which it was so long an important factor.

Editor W. I. Scandlin retires with an honorable record and has the best wishes of all his editorial associates for success in his new field of endeavor, noted elsewhere in this issue.

Photography and Medicine We take pleasure in calling attention here to the article on this subject, by Dr. Erichsen, which appears in this issue. Perhaps to the average lay reader the development of disease is not always a pleasant subject to look upon. But to the physician, nothing could be more interesting than a series of photographs showing the progress of some skilful piece of surgery. Over and over again it has been demonstrated that photomicography is of inestimable value in studying the etiology of epidemic disease. The camera makes permanent record of their evanescent forms and shows the growth and development of the disease germs that are devastating the tissues. An intelligent interpretation of their meaning helps the physician to combat the disease more successfully. Doctors are, and of right ought to be, vitally interested in photography.

Photography and Journalism Photography plays a most important part in modern journalism. The metropolitan dailies of any account are now equipped with photographic departments under the management of skilful artists. Each reporter is a photographer, and when given an assignment he takes his camera to secure negatives of any event or scene he is expected to report and describe. In an incredibly short time after its occurrence, the newspaper, through the camera, can present its readers with a faithful picture of an accident, a big fire, a wreck, or a prominent social function, with all the realism of an eye-witness. Now comes the announcement from a prominent New York journal that it will employ no more reporters unless they are skilled photographers and competent to illustrate their articles with photographs.

World's Fair and Photography At a recent meeting held in St. Louis, Mo., photographers from several cities took definite steps toward inducing the World's Fair management to make some formal recognition of photography as a fine art. The Pan American and all previous expositions, with the single exception of the exposition at Glasgow last year, have classed photography among the liberal arts, and it has always been admitted as a part of this exhibit.

Meanwhile progressive workers now insist that the art has advanced to a point where it should be admitted as a fine art exhibit, since the display of pictorial photography along art lines, as separate from the commercial photography exhibit, is entitled to this recognition.

A committee from the Photographers' Association of America and the Photographers' Association of New England waited upon the World's Fair Commission. Col. John A. Ockerson, chief of the Liberal Arts department, who will have the photographic display under his direction, received them. Mr. Julius Strauss of St. Lonis, offered a mass of correspondence from photographic societies all over the world, showing the great interest aroused in the in the World's Fair. Provided that photography is recognized as a fine art all these societies will co-operate.

While this meeting was in progress news reached us from Paris that, for the first time in the history of Paris art exhibitions, photographs have been received as exhibits at the annual Salon. The photographs were submitted by Edward Steichen, a young American artist, and are regarded as a great triumph.

As the Paris Salon is regarded as the highest authority in art matters it would seem as though there was nothing further to say on this subject.

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Glass decoration, see Positive processes, general.

Glazing, see Retouching.

Gold toning, see Positive processes with silver.

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